

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 31 and SEQ ID NO: 32.
2. The nucleic acid molecule of claim 1 further comprising a heterologous gene operably linked to said nucleotide sequence of SEQ ID NO: 31 or SEQ ID NO: 32.
3. A vector comprising the nucleic acid molecule of claim 2.
4. The vector of claim 3 wherein said heterologous gene is a reporter gene.
5. The nucleic acid molecule of claim 2 wherein said heterologous gene encodes a polypeptide selected from the group consisting of luciferase, green fluorescent protein (GFP), chloramphenicol acetyl transferase (CAT), β -glucuronidase (GUS), secreted alkaline phosphatase (SEAP) and β -galactosidase (β -gal).
6. A host cell comprising the nucleic acid of claim 2.
7. A host cell comprising the vector of claim 3.
8. A host cell comprising the vector of claim 4.
9. The host cell of claim 6 which is a eukaryotic host cell.
10. The host cell of claim 6 which is a host cell of human origin.
11. The host cell of claim 6 wherein said host cell is a cell of tracheobronchial epithelial (TBE) origin.

12. The host cell of claim 11 selected from primary TBE cells and HBE1 cells.
13. The host cell of claim 9 which is present in a non-human mammal.
14. A method of culturing a host cell of claim 6 in a culture medium under conditions allowing the expression of said heterologous gene product.
15. The method of claim 14 wherein said host cell is of tracheobronchial epithelial (TBE) origin.
16. The method of claim 15 wherein said cell is cultured biphasically in an air-liquid interface.
17. The method of claim 15 wherein said cell is cultured on a substrate comprising collagen gel.
18. The method of claim 15 wherein said cell is cultured in the presence of retinoic acid.
19. A non-human transgenic mammal comprising the host cell of claim 9.
20. A method for the assessment of MUC5B gene promoter activity, comprising:
- (a) providing a reporter construct comprising a nucleic acid comprising a nucleotide sequence of SEQ ID NO: 31 or SEQ ID NO: 32, operably linked to a reporter gene encoding a marker gene product;
 - (b) delivering said reporter construct in a host cell; and
 - (c) assessing the expression of said marker gene product, wherein said expression is indicative of MUC5B gene promoter activity.

21. The method of claim 20 wherein in step (c) the quantity of said marker gene product is measured, wherein said quantity is proportionate to MUC5B gene promoter activity.

22. A method for identifying a compound capable of modulating MUC5B gene promoter activity, comprising:

(a) providing a first and a second sample of a host cell comprising a reporter construct comprising a nucleotide sequence of SEQ ID NO: 31 or SEQ ID NO: 32, operably linked to a reporter gene encoding a marker gene product;

(b) contacting the first sample of said host cell with a test compound;

(c) assessing the expression of said marker gene product in said first and second samples; and

(d) identifying said compound as capable of modulating MUC5B gene promoter activity if the expression of said marker gene product is significantly different in said first and second samples.

23. The method of claim 22 wherein in step (c) the quantity of said marker gene product is measured, wherein said quantity is proportionate to MUC5B gene promoter activity.

24. The method of claim 22 wherein said modulation is inhibition.

25. A method for identifying a compound capable of modulating MUC5B gene promoter activity, comprising:

(a) providing a host cell comprising a reporter construct comprising a nucleotide sequence of SEQ ID NO: 31 or SEQ ID NO: 32, operably linked to a reporter gene encoding a marker gene product;

(b) contacting said host cell with a test compound;

(c) measuring activity of said reporter gene construct; and

(d) identifying said compound as capable of modulating MUC5B gene promoter activity, if the activity of said reporter gene construct is significantly different from activity measured prior to contact with said test compound.

26. The method of claim 25 wherein said modulation is inhibition.

27. A method of producing a non-human transgenic animal, comprising

(a) introducing a vector comprising reporter gene under control of a MUC5B promoter sequence comprising a nucleotide sequence of SEQ ID NO: 31 or SEQ ID NO: 32 into an embryonic stem cell of said non-human transgenic animal to produce a transgenic embryonic stem cell;

(b) introducing said transgenic embryonic stem cell into a female mouse under conditions such that said mouse delivers progeny of said transgenic embryonic stem cell; and

(c) identifying at least one offspring of said progeny comprising said vector.

28. The method of claim 27 wherein said non-human transgenic animal selectively expresses said reporter gene in a cell of tracheobronchial epithelial (TBE) origin.

29. The method of claim 28 wherein said transgenic animal is a mouse.

30. A method of screening compounds for the ability to modulate MUC5B gene promoter activity, comprising

(a) administering a test compound to a non-human transgenic animal of claim 27, and

(b) monitoring MUC5B gene promoter activity.

31. The method of claim 30 wherein said modulation is inhibition.

32. A method for specific expression of a nucleic acid of interest in cells of tracheobronchial epithelial (TBE) origin of a mammal, comprising delivering a vector

comprising said nucleic acid of interest under control of a MUC5B promoter sequence comprising a nucleotide sequence of SEQ ID NO: 31 or SEQ ID NO: 32 to said mammal.